

THE PASSING OF THE PHANTOMS

TO-DAY AND TO-MORROW

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Photograph by C. J. Patten.

Two are company but Three may be

PLATE I.



THE PASSING OF THE PHANTOMS

A Study of Evolutionary Psychology
and Morals

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With four illustrations

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To
W. J. N. V.

PREFACE

In this little book the author recounts, first hand, a number of instances—out of many more known to him—illustrating the evolution of the mental and moral faculties in lower animals. Animal behaviour is a study which at all times gives much pleasure and amusement ; but its supreme importance and interest is found in the fact that it places in our hands the master-key which unlocks the secrets regarding the Evolution of Human Morality.

C. J. PATTEN.

The University, Sheffield

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CHAPTER I

THE REALITY OF EVOLUTION

The widening of the horizon of biological knowledge within recent years has been remarkable and has cast a flood of light on the question of 'Man's Place in Nature.' At the present day well-informed persons have abandoned the idea of a 'miraculous' or special creation of man, yet it is curious to note with what tenacity tradition adheres, and how speculative theories and poetical imaginations to a large extent still prejudice the mind to shut out pure reasoning and rational philosophical thinking. While it has become very general now-a-days to accept the idea of evolution as that method by which man came to inhabit this planet, one still asks do most of us thoroughly grasp the

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principles of the doctrine which we profess to accept ? While many of us do, still it would appear that there are others who vaguely accept the doctrine because it is becoming more fashionable to do so every day. That is to say man, a highly gregarious animal, is carried away to follow the strong leaders of the flock. But to get a clear conception of the wonders of organic descent one must insist that it is not enough to listen only to lectures : we must be students of Nature, endowed with a wholesome amount of scepticism, and not content ourselves with accepting *en masse* the evidence of others without verifying for ourselves as far as we can the revelations made in the study of the biological sciences. I introduce these few sentences at the outset because I wish to point out what a very strong attitude of mind in

avour of the reality of *Evolution* human evolution is fostered *a reality* by those of us who have had the opportunities of making a special study of biology, more

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particularly when this includes a detailed knowledge of human anatomy and embryology. But it might be asked : Why then do our medical brethren who study anatomy in detail not act more fervently as propagandists of the theme of evolution ? As a matter of fact, I have seldom met with a medical student who at the end of his anatomical course has not, at least in an unprejudiced and general way, accepted evolutionary principles ; but, even if such fail to occupy a foremost place in his mind, it is not surprising considering the strongly utilitarian view he takes of the study in question. The medical student, and he who teaches the subject of anatomy from this utilitarian standpoint alone, obtain but a limited view of the great principles of human structure. This is brought home to us at once by taking one or two familiar examples. The medical student seldom stops to consider the significance of the presence of the mammary gland in the male. To him its presence is probably a

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matter of little import. But in the mind of the anatomist the question at once arises: Why is the organ there at all, if it be useless? And he finds by further examination in an early stage of the intra-uterine development of the individual that the gland is already present when the external sex-organs are indistinguishable, and when it would be impossible to say which sex the individual would ultimately assume. The logical conclusion arrived at, then, is that this gland is only suppressed, in one sex, so that the male has incorporated in its body structural features, more fully developed and functional in the female, a distinction merely of degree but not of kind. *Vice versa*, an examination of the female generative organs reveals to us the fact that the male homologues have not vanished, but are merely suppressed. This short chain of reasoning from objective biological evidence regarding the presence of structures which can

Evidence of Evolution from vestigial Sex-organs

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be examined without even resorting to dissection has a most important bearing on the whole question of the evolution of sex from an ancestral hermaphrodite stock. And, indeed, we find on comparing our human embryo in certain very early stages with some lower forms of life which are hermaphrodite, that a marked similarity can be made out. The evolutionary history of the mammary glands is highly interesting, and deserves short notice as shedding light on the reality of evolution. Sir Arthur Keith in his delightful work *Human Embryology and Morphology* (4th ed., 1921) says that "it is a remarkable fact that although the milk glands do not come into use until adult life, and although they must be regarded as among the later evolved structures of vertebrate animals, yet they are *the first of all the glands arising from the epidermis to appear during development of the embryo*. In the human embryo of the 6th week, or in the corresponding stage of a pig or of any other mammal, the primary mammary ridge or milk

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line—a mere surface thickening of the ectoderm—is seen extending along the body wall on either side from axilla to groin. Breslau¹ regards these primary ridges as representatives of the brooding organs of the ancestors of mammals, from which structures he supposed that the mammary glands were evolved. In a large number of human beings (15%) one or more supernumerary nipples are to be found between the axilla and the groin, indicating the wide distribution of ancestral glands. The mammary ridge appears in both sexes alike, but this may not mean that both sexes of ancestral mammals were concerned in brooding or gave milk. The male is the father of girls as well as of boys ; it is therefore necessary to provide both father and mother with a complete sexual outfit if each sex is to provide equal shares to the making of their progeny. In females the breasts undergo a great development at puberty while in males they retain their infantile

¹*The Mammary Apparatus of the Mammalia*, with Introduction by Prof. J. P. Hill, London, 1920

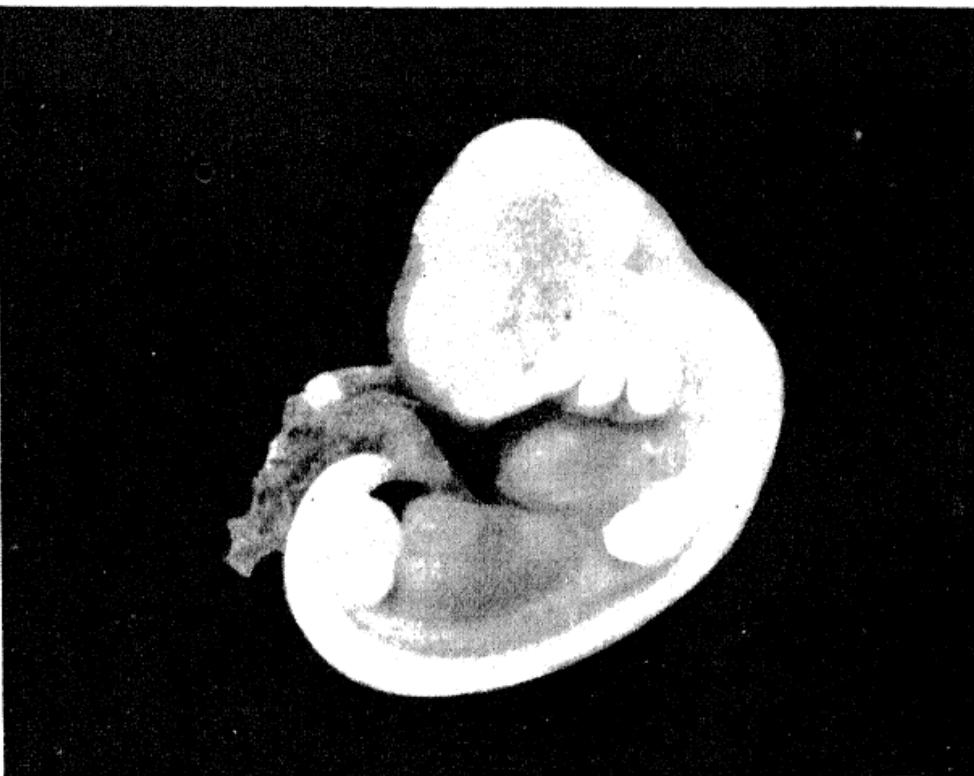


PLATE II.

Photograph from nature by C. J. Patten.

An embryo of a Guinea-pig at a stage of development when the limbs are beginning to appear in the form of simple bud-like outgrowths. Mammalian embryos (Human included), are practically indistinguishable at a stage corresponding to this in development.

The embryo is magnified six times, its natural size being 8 mm., or a shade under $\frac{1}{3}$ inch.

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form." Many other instances could easily be cited of the presence of structures which afford us incontestible evidence of the evolution of the human body from ancestors not necessarily of human form. Suffice it to draw attention to certain muscles which in *Herbivores* and other Orders are well developed and functional but are only vestigial in man, and to other muscles

present in certain groups of *Evidence of lower animals*, which, *Evolution* though long-since disappeared from the later *atavistic* human ancestry, nevertheless occasionally, by the strong strain of heredity, make their appearance again in human beings of the present day. The study of Human Embryology is most convincing, and carries with it incontrovertible proofs of evolution. We find that it is only at the later stages of development within the uterus that the human being is recognizable as such, when it is known as a foetus. In common with other higher animals,

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man *in utero* repeats the stages of his ancestral-tree from the very lowest to the highest forms of animal life, due

allowance being made for *Evidences of Evolution from Human Ontogeny* a blurred and imperfect picture owing to adaptative modifications which have arisen during countless ages and are purely secondary in character. Nor can it

be argued that the process by which development proceeds is simply a mechanical one, built on a uniform plan or design of Nature. For, if it were, to take a simple example out of hundreds, one might ask why, just at the termination of foetal life, the digits of the limb are so specialized in different mammals? All arise alike ; but compare the hoof of the horse, the flipper of the seal, the functionless and atrophied thumb of most quadrupeds, and so on, with the hand of man (*v. Pl. II*). There is no moulding within the uterus to produce these patterns mechanically. We are led to consider that, while we inherit through our non-human ancestors many features

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(more or less portrayed in our living non-human cousins), we also have had impressed upon us, demonstrable only at the termination of our embryological career, the features of our immediate predecessors, namely our own parents, and these features hall-mark us as the individual proper to which we belong, that is to say into which we have evolved. Even these few instances which I have cited regarding the study of human structure will, I think, suffice to remind us how intimately bound up become the thoughts of the anatomist with the evolution of his own body. Material for investigation is before him daily, and he cannot—even though he wished it—get away from the fact which may be expressed in Darwin's words: "Man still bears in his bodily frame the indelible stamp of his lowly origin." But here no thoughtful anatomist can stop. With *Mental Evolution* the material for the study of the development of the Brain in front of him, from the extremely simple membranous tubu-

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lar condition of that organ to the adult form, when the scheme of its complexity seems an almost hopeless task to unravel ; with the application of his knowledge of function supplementary to his knowledge of structure, he is carried onward ever more and more to consider as far as he can push his biological data, the physical basis of mental manifestations which go to form the phenomena grouped under habits, out of which the conduct or ethical aspect of the individual, relative to his fellow-creature, springs. As the processes of mental development are very imperfectly realized, I may here

*Outline
of the
Evolution
of the
Human
Brain*

indicate very briefly the outlines along which the Brain develops, pointing out at the same time its correlation during phases of its development with the permanent, that is, the adult condition of the brains

in several other animals. The expression 'thin-skinned,' often applied to persons who might be judged as



PLATE III. *Photograph from nature by C. J. Patten.*
An early embryo of a Song-Thrush on its embryonic shield, seen from the dorsal aspect, and showing the commencement of the nervous system in the form of a groove which dilates at the head-end to form the primitive brain.
The embryo is magnified 7.6 times, the natural size being 5 mm., or $\frac{1}{2}$ inch.

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mentally over sensitive, is not inappropriate when we bear in mind that the Brain and Spinal cord, in fact the whole nervous system, originates from the skin-layer of the embryo; and, indeed, in the lower forms of Invertebrate animals the beginning of a nervous system is diffused over the skin-layer, in which are found indications of sensation. In such forms, for instance as the jelly-fishes, the brain-skin layer does not differentiate or split off into its two component parts; but in higher forms we find development proceeding in this wise; an elongated groove appears on the surface of a circumscribed area of an oval-shaped vesicle. The area is known as the embryonic shield, because it is on it that the embryo is afterwards laid down. But when the groove first appears there is, so to speak, but little else of an embryo, except that part which is now differentiating itself into the form of this groove. In other words, a very early indication of the appearance of the embryo is represented

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by its groove-shaped nervous system. But to continue. The surface-groove is soon converted into a simple straight tube, which, seeking a deeper situation, becomes surrounded by other tissue and cut off from the general surface-layer. Its wall then is extremely thin, comparable to a very fine membranous film, and the cellular elements of which it is composed are comparatively simple in shape, such as are found in many other parts of the permanent body.

Very rapidly, however, the front por-

tion of the tube dilates into three bulbs which are separated only by surface constrictions, so that their spacious cavities are continuous. These bulbs or vesicles are, in fact, the whole of the primitive Human Brain, out of which all other subdivisions of the organ are derived (*Vide Plate III*). Microscopical examination reveals to us here, and also in the lower portion of the tube (the latter forming the spinal cord), very thin membranous walls. How-

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ever, with high magnifications of the microscope, the cellular elements are seen to be evolving speedily from simple to more complicated shapes. They give out branching processes which minutely interlace with those of neighbouring cells. These cells become very complicated in the ultimate analysis of their minute protoplasmic structure before the wall of the brain undergoes much thickening. They serve the purposes of allowing stimuli to pass from one cell to another, which, shooting along the innumerable branchings, can set up changes in the cellular elements, sometimes over a considerable area of the Brain. However, as long as the wall remains thin the cell-machinery remains, comparatively speaking, very limited in its action. In the lower forms of fishes, whose brains developmentally correspond more or less with the conditions of the early Human Brain, the higher mental manifestations, such as *memory*, *thought*, and so on, are feebly, if at all, capable of being called forth. If we now

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examine the fore-brain of a Human Foetus somewhat advanced, say at the stage when the organ is structurally comparable to the brain of an adult rabbit, we find that the walls have greatly thickened, giving the organ the appearance of being solid with a small hollow core. A very thin section of this wall shows vast numbers of complicated branching cells—what myriads, therefore, can the entire thickness of the wall accommodate ! A step further and we behold in the Brain of the new-born babe a highly elaborate organ with immensely thickened walls stocked with cells which form the psychic machinery, and too intricate in their structure to call for special description here. And while now, from the structural point of view, we may regard the Human Brain as almost completed in its marvellous complexity, we are nevertheless struck with the great hiatus existing between the mental powers in parent and babe. It is true that many faculties of the Brain (which we would have as abstract in nature)

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manifest themselves at an extraordinarily early period, and that they seem to be the results of past experiences of the Human Race, which, having accrued, have been passed on by heredity to the offspring; yet others, and even the same faculties under different conditions, are put into action by experiences founded mainly on the child's own observations and experiments. Regarding experiences inherited, Herbert Spencer points out that "an infant in arms, when old enough to gaze at objects around with some vague recognition, smiles in response to the laughing face and soft caressing voice of its mother. Let there come someone who, with an angry face, speaks to it in harsh tones. The smile disappears, the features contract into an expression of pain, and, beginning to cry, it turns away its head, and makes such movements of escape as are possible. What is the meaning of

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these facts ? Why does not the frown make it smile, and the mother's laugh make it weep ? There is but one answer. Already in its developing brain there is coming into play the structure through which one cluster of visual and auditory impressions excites pleasurable feelings, and the structure through which another cluster of visual and auditory impressions excites painful feelings. The infant knows no more about the relation existing between a ferocious expression of face, and the evils which may follow perception of it, than the young bird just out of its nest knows of the possible pain and death which may be inflicted by a man coming towards it ; and as certainly, in the one case as in the other, the alarm felt is due to a partially established nervous structure. Why

does this partially estab-

Inherited lished nervous structure be-
Experiences tray its presence thus early
of mental in the human being ?
manifesta- •Simply because in the past
tions experiences of the human

race smiles and gentle tones in those around have been the habitual accompaniments of pleasurable feelings; while pains of many kinds, immediate and more or less remote, have been continually associated with the impressions received from knit brows, and set teeth, and grating voice. Much deeper down than the history of the human race must we go to find the beginnings of these connections. The appearances and sounds which excite in the infant a vague dread indicate danger; and do so because they are the physiological accompaniments of destructive action, some of them common to man and inferior mammals, and consequently understood by inferior mammals as every puppy shows us. What we call the natural language of anger is due to a partial contraction of those muscles which actual combat would call into play; and all marks of irritation down to that passing shade over the brow which accompanies slight annoyance are incipient stages of these same contractions. Conversely

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with the natural language of pleasure,

and of that state of mind

Physiologi- which we call amicable

cal inter- feeling ; this too, has a

pretation of physiological interpreta-

Anger and tion." Let us now examine

Pleasure the same faculties, viz. sor-

row and joy under different

conditions, and see how the Brain machinery is called forth into action.

The child trips over the door-mat and falls in its eagerness to reach the sweetmeat held up in the parent's hand at the other end of the room. The fall

occasions pain, but only in a slight degree, not sufficient to warrant the burst of screams and sobs which follow.

The experiment is repeated, and the child comes down again, this time more easily still, but the cries become worse and more prolonged. And, if the

experiment is again repeated and the child falls, its sorrow instead of abating

seems to increase. Why is this ? It

seems contrary to the more familiar cases of children who, after several

upsets of an easy kind, i.e. involving

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little or no pain, become used to the mishap and get up smiling. But the particular child of whom we speak has made an important observation as it treads its way hastily across the floor, and as it falls it continues in piteous

sobs, to observe—what?

The unfolding of the mental Faculties of Sorrow and Joy the sweetmeat. And it is in the great disappointment involved in the loss of time in securing the coveted tit-bit, coupled with sensation of pain, here only slightly felt but no doubt involving an unpleasant inherited sensation, that such an outburst of the mental manifestation—*Sorrow*—is now unfolded. In a short time the child tries the experiment of raising his feet higher in passing over the door-mat, and now, finding that in so doing he no longer comes tumbling down and consequently can scamper across the room without interruption to obtain the sweet, the mental manifestation of—*Joy* is more and more unfolded and the outbursts of laughter, as the experiment

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is repeated, become more marked. And further, regarding this part of the subject, it may be said that while there is reason to believe that the basis of Memory is to a large extent the outcome of inherited experiences, still it undergoes rapid expansion as the child proceeds to build up its own vocabulary by associating sounds with ideas, and by showing a most earnest desire to reproduce those sounds as seen in the impatient and imperfect way in which they are blurted out, the parent often being at a loss to know what they mean.

I need dwell no further on the support of the truths of Evolution : it is clear that physically and mentally we undergo a gradual process of development from the simple to the complex organism. The evidences to be derived from the living forms of animal life around us need not here detain us. Let us just bear in mind that none of those now

living could closely represent in form our ancestors, *or Stem*— as it is sometimes stated. *Evolution* Their kinship could only be

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that of a cousin: the ape a closer cousin than the cat; the cat a closer cousin than the jelly-fish. These creatures are in themselves modified from the common ancestral stocks (vast numbers of which have long since become extinct), from *Cousinship* with all living beings which their cousinship has diverged. A study of ancestral stocks would take us too far a-field in this treatise, so we must be content to accept the statement that pre-natal evolution or the evolution of one's own being, and stem-evolution or evolution of the race are closely intertwined. But since I have asked you to give your support to Organic evolution, largely on the evidences derived from a study of pre-natal development, one question will probably suggest itself, namely, what is the nature of this extraordinary persistent force of heredity which acts on the egg of a Human Being, which Human Being has for thousands of years lost to a great extent his resemblance to unhuman-like ancestors.

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The early stages of pre-natal development, were these mechanical in nature, would be more easily understood, because the embryos of many animals are then almost indistinguishable, and might, so to speak, be cast in the same form of mould. But, with regard to the later stages, where the mechanical notion is quite impossible to entertain, we ask how does heredity act in evolving a generalized fore-limbed-embryo into the special form of its parent? It is true that aberrant types do arise, but these are so exceedingly rare¹ that their occurrence does not seem to affect the question. We ask if an embryo, say of a dog, is during its stages of development recapitulating its genealogical tree, why is it not sometimes born unlike a dog, and like some more or less remote vertebrate

¹ Such must be distinguished from the *monsters* of medical science, which include many forms of arrest of development, and plural fusions. One genuine aberrant form of kitten has come under my notice, in which the face was long and pointed and the eyes open at birth.

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ancestor? For, after all, when due reflection is made with regard to the wonderful transformations in later embryonic existence which go on, it is remarkable with what surety the offspring reaches the goal and structurally is born an exact miniature of its parents. This marvellous hereditary conservation which permits of *like begetting like* seems to depend upon *long-*

associated habits of the cellular

The Force lar elements of the embryo of Heredity itself. This is made more

in clear when we remember *Ontogeny* that, as Sir Francis Darwin

has put it,¹ the characteristic of habit is, *par excellence*, a capacity acquired by repetition of reacting to a fraction of the original environment. Thus, when a series of actions are compelled to follow each other by applying a series of stimuli, the actions become organically tied together, or associated, and follow each other automatically even when the

¹ *Presidential Address. Brit. Assoc. Dublin, 1908*

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whole series of stimuli are not acting. And further light is thrown on the subject when we take into consideration the fact that stimuli (here represented by a series of stages of cell-division and growth, each stage apparently serving as a stimulus to the next) are not momentary in effect, but leave a trace of themselves on the organism constituting thereby the physical basis of the phenomena grouped under *memory*

Physical basis of Memory in its widest sense. Indeed, there is reason to believe that *memory* has its place in the morphological or structural as well as in the temporary reactions of living things. And finally, with regard to the memory-faculty in connection with the development of the Human Embryo from its initial stage as a simple egg into the perfect organism, in referring to the wonderful series of ancestor-like changes which take place and which resemble those that arose in the long process of stem-evolution, here Sir Francis Darwin draws a striking analogy in saying :

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“ This is precisely paralleled by our own experience of memory, for it often happens that we cannot reproduce the last-learned verse of the poem without repeating the earlier part: each verse is suggested by the previous one and acts as a stimulus for the next. The blurred and imperfect character of the ontogenetic version of the phylogenetic series may at least remind us of the tendency to abbreviate by omission what we have learnt by heart.” It is a matter of profound interest to know that the basis of *memory* by association

The Existence of Memory in plants exists in very low forms of animal as well as in plant organisms. In the latter this factor has been illustrated by the power of movement, which power, though acting to stimuli, can be seen to take place in the absence of such. That a simple form of associated action implies consciousness, as we understand that phenomenon, is a point I am unable to enter upon; and yet it is impossible to know whether

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or not plants or the simplest forms of
animal-life are conscious ;
Psychic element pervades organic Nature “ but it is consistent with
the doctrine of continuity
that in all living things
there is something psychic,
and, if we accept this point
of view, we must believe
that in plants there exists a faint copy
of what we know as consciousness in
ourselves ” (Sir Francis Darwin).

CHAPTER II

EVIDENCES OF THE EVOLUTION OF MENTAL POWERS

From what has been said in the foregoing pages it is evident that not only our bodily equipment but also our mental manifestations—which latter are often regarded as abstract, and merely concomitant with changes in the brain-substance rather than physically the direct outcome of such changes—these have a deeply rooted origin in the remote beginnings of living things. Space has permitted me to approach the faculty called *memory* only from the developmental standpoint. I have selected it because, while we have evidence to show that *memory* is not confined necessarily to the workings of the Brain alone (the other cells of the 'soma' or body, participating in the manifestations of this phenomenon), and therefore while its supposed purely mental origin in embryonic existence may be considered as incomplete, never-

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theless the conscious mental workings of this marvellous faculty after birth are of primary importance in connection with the rise and advancement of morality. Subservient, and revolving, so to speak, around Memory, as the planets round

a solar system, are such

*Psycho-
biological
analysis of
mental
faculties* emotions as *Joy, Sorrow,
Fear, Anger, Love, etc.*, and some of these we have already touched upon from the developmental point of view.

Other expressions of mental activity of great importance and complexity, such as *Curiosity, Imitation, Imagination, Admiration, etc.* have also evolved, and their presence can be traced far down the trunk of the ancestral tree. But the evidence of their evolution must for the most part be assumed ; for even a comparison of these faculties with the same in man is a subject which I cannot here touch upon, except in some of the cases which have come under my personal notice. If the reader wishes to pursue this subject further let him glean from the

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pages of Darwin's *Descent of Man*, and he will see, in the chapter on this theme, an array of marshalled facts which leaves no room for doubt.

I will confine my attention to observations which I have made on the powers of *Imitation*, *Attention*, *Imagination*, and *Admiration* among some of the lower animals. My subjects have been pigeons, hawks, dogs, cats, and horses, all of which except the last were at one time or another my own particular pets. And I would add that in each case the particular faculty in question has been strongly developed during the animal's tenure of captivity. I shall also recount a few more cursory

observations on animals in *Hawks* : *Attention* *faculty of* *Zoological Gardens*. I have always had a particular fancy for hawks. Attracted by their beauty of form, bold, fearless, and honest expression of eye, their hardiness of nature together with the rough and ready way in which, when one has gained their confidence and love, they will exhibit affection,

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are points to which I have paid much attention. I have kept a succession of hawks ever since my boyhood, and have noticed on many occasions remarkable instances of the development of a faculty which should be capable of expansion in them, namely *Attention*. This I say because the brain of a hawk may be well described as an *eye-brain*, the sense of sight being developed altogether out of proportion to the other senses. One of my Kestrels, which was a female, would attend so eagerly to a sudden rush and bark of a little dog when near the cage that I could lift up one foot, gently close the bird's talons, and shake 'hands.' The reason of this concentrated attention was that the hawk associated the sudden barking with the presence or possible approach of a black cat which periodically came round and tried to purloin the meat, an action usually checked in the nick of time by the canine custodian. The bird loved music; a soothing lullaby, constantly repeated, would call forth so marked

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contentment (as the bird gazed with steadfast look into one's face) that one could stroke her feathers, a proceeding much objected to under ordinary mental conditions. A friend staying on a visit, who has a passionate love for animals, took a great fancy to my pet, and this was strongly reciprocated. One evening as the bird stood on a table, she lent over her and in whispering tones commenced a soft lullaby. So charmed, I might say almost mesmerized, became the listener that she took no notice of a miniature doctor's gown, of bright red and blue material being laid across her shoulders ; and it was not for several minutes afterwards, when she awoke from her reverie at the cessation of the music, that she beheld her strange guise, and then with a

swift stroke of her claws *Hawks : faculty of Imagination* pulled off the garb. This hawk was strongly imaginative, as the following incident will illustrate. On approaching her coop with a hard black felt hat on my head,

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she never recognized me, and exhibited considerable dread of my presence. I cannot say that I have quite discovered the reason, but it would appear that she conjured up in her mind a vague mental picture of something animate or otherwise which she had probably once upon a time seen and which frightened her, and that she associated its form with my harmless head-gear. The timidity can hardly be the outcome of inherited experience, for no natural enemy that I know bears a semblance to the rim of my hat, which I think is

the part she feared most.

Fear associated with Imagination Rooks and especially ravens often mob and drive away from the cliff this species of Hawk, but I fear it would be far-fetched for me to entertain the notion that my hat appeared as an effigy of one of these swarthy combatants, especially as my bird never saw either cliff or raven in its life. Indeed the *colour* of my hat was not the real cause of alarm, as is seen by the fact that a person

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dressed entirely in black without the hat on, approaching instilled no fear. And so, as an ultimate suggestion, I ask, *was the colour coupled with the form, of my hat* conceived as resembling the feline lurker above referred to?—and, if we admit this, we must allow for considerable elasticity of the bird's imaginative faculty. At all events, whatever, was her cause of fear, it seemed unwarranted, for I have never tried to induce fright—in fact, when wearing the hat, I have sought to distract attention by the offer of food; but this has been of no avail.

Most of us are aware that in pigeons both sexes take on the *Pigeons: faculty of Attention* task of incubation. But sometimes the female will leave her eggs for a short period in order to obtain food, when she will return for another spell on the nest before exchanging duties with her mate. When she is on the ground, the male usually feeds for a short time with her; but, if she delays too long, he hunts her back to

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the nest. Among my own pigeons I have observed how a female which remained off her eggs too long, after several offences drew the attention of her mate so markedly that, on attempting to come off her eggs again he immediately flew after her and, pecking at her vigorously, succeeded in sending her back at once to her maternal duties—in fact he showed distinctly that he did not intend to allow her to leave the nest until it was time for him to take on his share of incubation.

Illustrative of the faculty *Cat* : of imitating voice-sounds I *faculty of* cite the following : In *imitating* a large male tabby-cat *voice-sounds* which showed great aptitude for performing tricks I managed to develop a curious double call-note. I incidentally noticed this strange sound, which the cat first made when he had a severe throat affection. Unable to produce the usual prolonged 'mew' when about to receive his saucer of milk, he endeav-

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oured to show me his wants by two little ejaculations resembling the barks of a puppy. During his illness he made these sounds at very frequent intervals of the day, and it occurred to me that, if I gave him milk each time he uttered them, he might associate this generosity on my part with the abnormal sounds he produced. As the cough passed away, and the normal prolonged single-syllabled '*mew*' returned, I used to hesitate before putting the saucer to the ground. At first there was no response, but soon the bitter disappointment which seemed to enter the feline mind at being refused its drink in response to many a plaintive '*mew*' seemed to awaken in his memory recent associations of ideas suggestive of the repetition of the double note. The moment I heard this I placed the saucer of milk on the floor and thus after some difficulty I succeeded in developing a permanent double call-note in this domestic pet. Here it would appear that the cat learned to retain by imitation an abnormal sound

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which emanated from himself originally ; though I must have helped on the power of this faculty by my own mimicry of the abnormal sound which I often repeated when bribing the animal.

Imagination is highly developed in *Dogs* : *faculty of Imagination* Dogs. Their intellect is so bright and their disposition so sympathetic that it is an easy matter to beguile them into the belief that harmless inanimate objects may possess 'evil spirits.' One of my small dogs always stole away from me with uncoiled lowered tail if I showed her a black bottle, and this dread of the uncanny is simply due to the fact that the first time I showed the bottle I uttered a few remarks in a grave tone similar to that which I would adopt if she put her muddy paws on my coat or committed a like trivial offence. This fear is hardly comparable to that displayed when a dog is shown the whip, for in the latter case the animal has probably been on many previous occasions severely hurt by the actual

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use of the lash. If a few gravely uttered sentences once made were sufficient to deter the animal from approaching a certain object, why did the same animal jump on my lap repeatedly with muddy paws when the bottle was not visible? In the latter action correction had been more repeatedly and stringently enforced—indeed I have often shown annoyance, as one naturally would, at one's new clothes being smeared with mud. The answer to the question seems obvious. The dog had acquired a permanent love for her master: she longed for petting and caresses. When she saw him sitting on a chair, she, on entering the room, bounded on his lap, forgetful in her excitement of previous corrections. But a black bottle was an object concerning which she was absolutely indifferent to originally, and would have passed it by in the street without further ado. When, therefore, she saw her master (whom she was wont to revere with almost complete religious-like submission) introducing her in

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grave warning tones to this curious object, her imagination began to expand, and her original indifference, passing through phases of suspicion or curiosity, became lengthened out into a *permanent superstition*.

Several dogs that I have kept have indulged in the habit of uttering a

Dogs : belief in Spirits melancholy whine during moon-light. I used to think that the light shed from the moon itself was the direct cause of such utterances, but it has been pointed out that, as dogs stare not at the moon but at some fixed point on the horizon, their "imaginings may be disturbed by the vague outlines of the surrounding objects, and conjure up before them fantastic images : if this be so, their feelings may almost be called superstitions." Returning to observations made on a pug-dog, I may add that she was fully sensible of *Admiration* ; by decking her out with a bright blue or scarlet ribbon tied in a big bow round her neck, by praising her with

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pleasing tones and friendly pats (especially in the presence of a circle of human admirers), she would sit up and start a sort of chattering conversation, often in little ejaculations of two or three syllables ; then pause ; and

then start the same again,

Dogs : this being kept up for some *faculty of* time. Increase of *Admiration* versation, especially when

addressed to the animal, would encourage this action, which was accompanied with the fullest amount of facial expression possible—indeed a faint incipient smile appeared as the upper lip was softly raised and retracted. This expression was quite distinct from the raised lip seen during a snarl ; for, in the latter case, the other facial muscles of combat were brought into action. This chattering sound to which I have just referred had evolved from a few short sharp barks impatiently emitted when I neglected to throw bits of biscuit after asking the dog to “beg.” And instead of always throwing the bits at once,

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and thereby stopping the barks, I used to address the dog in somewhat similar tones to its own, but I added to the syllables : by repeating this on many occasions when giving food, I managed to call forth response. Ultimately I could set the chattering going by warm adulation alone.

While dogs are highly imaginative, I do not think they possess much faculty for mimicry ; yet

Dogs : faculty of Mimicry there are some remarkable instances, cited by observers of repute, illustrating to what a remarkable degree this can be brought out. The instance which I have given regarding the chattering, and which has been developed partially along the lines of mimicry, is all I can recount in the case of dogs. But, curiously enough, many instances are cited of dogs (which have been reared by cats) licking their own paws and then rubbing their faces and ears (such a well-known action of the cat). I had a cocker spaniel which indulged in this habit quite frequently,

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though not exclusively, and yet his only intercourse with cats has been to chase them off the premises.

Returning to the question of the faculty of *Imagination* culminating in an elemental superstition in lower animals, I will just refer to one of many cases which I have witnessed in Horses. A horse, yoked to a light trap containing two occupants besides myself, was being driven down an avenue. Peeping over a hedgerow of an adjacent garden was a large sun-flower, which the animal observed some little distance off. Drawing near, he watched it so steadily that several pulls of the reins failed to turn his head. Arriving opposite the inflorescence, he stopped momentarily, and, not in a fearful but rather in an intensely curious way, stared at it. A slight breeze caused the plant to sway forward, whereupon the animal commenced to bolt. The curiosity here aroused, which ended in the animal's short halt to investigate this

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strange object, seems to me to indicate some dim idea in the animal's mind of the presence of something uncanny.

Horses : genuine fright at natural enemies The animal evidently regarded the sun-flower as a fetish. I am lead to believe this inasmuch as such action differs markedly from the immediate stampede which

even a well-trained, quiet, and fully-grown horse will make at its natural and real enemy, a lion or a tiger, should even only the head of one of these beasts appear afar off.

In regard to the faculty of Imagination occurring in wild beasts confined behind prison bars, it is quite amazing to observe what may or may not present itself as a fetish. I placed a reflex camera with a *large telephoto lens* close to a cage tenanted by a lion and a lioness. The camera was slung from my shoulders. I had hardly commenced to manipulate the instrument when the animals, becoming conscious of the uncanny stare of a cyclopean monster (lens), instantly

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stampeded, performing a series of catherine-wheel actions round their den. In an adjacent cage was a panther. On seeing "cyclops," this feline retreated to a corner and commenced to growl and hiss, changing corners as I moved diagonally in front of the bars. Reflex cameras now-a-days are used so extensively in zoological gardens and menageries that the animals, unless freshly imported, take little notice of them ; however it was not my camera alone which brought such consternation to the king of beasts and his queen ; it was the *unusually large lense* ("the eye of cyclops") no doubt very seldom seen in a Zoo—which shocked them. The uncanny may be something very small. On one occasion I saw a puma very much frightened at the sight of a white mouse sitting on the back of a man's hand placed close to the cage ; a similar case has been recorded of a tiger being terrified when a mouse, tied by a stick, was inserted into its cage, the great beast, crouching in a corner, trembled and roared in a paroxysm of

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fear. We are superstitious of tiny creatures of human form (Fairies). Perhaps the tiger entertained a similar mental state of a fairy quadruped !

Having related these instances, and before leaving the question regarding the mental powers as exhibited in the animal kingdom. I will remark that the tendency to imagine Spiritual Essences in natural objects evidently has had its origin in creatures below the human race, a point of much importance in pursuing one's inquiries into the origin and value of the ethical code in relation to primitive and more advanced theologies, and into the real value which we must endeavour to attach to so-called right and wrong. When Charles Darwin's dog, which he describes as a full-grown and very sensible animal, growled fiercely and barked at the open parasol on the lawn which the wind slightly moved, having no knowledge of the cause, a dim ethical aspect of the matter took possession of the animal's mind : was it right or wrong to permit such a strange ' living ' agent

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to cause this movement? In his ignorance, the dog condemned this cause of action, but ethically he was wrong in so doing, for he gained nothing, nay rather ex-

Ethics of effects in the ignorance of the causes pended unnecessary energy in barking at the effects of the wind; and, for aught we know, this uncalled-for expression of his feelings

may have disturbed the balance of nature's equilibrium among the creatures which lay around him. I cite this example because we see on a far larger scale so many parallels of boisterous expressions poured forth not only by ignorant savages but by civilized, nevertheless superstitious, people, in their endeavours to solve the problems of supposed Right and Wrong, the effects of which they witness but of the causes of which they know nothing, and about which they often frame the wildest and most fantastic conjectures.

CHAPTER III

EVIDENCES OF THE EVOLUTION OF THE MORAL SENSE

One might first be inclined to think that the upgrowth of the moral sense would develop alongside the upgrowth of the mental powers—I mean that the more complicated structurally the Brain became the more elaborated and complex would become codes of ethics. But in the long stem-history of Biological Genealogies we see in many of the side-eddies which are carried from the main stream of evolution evidences not only of arrested progress but of decided degeneration, and so the growth of morality does not go on in all cases

Arrest of progress in Evolution *pari passu* as the antiquity of the organic evolutionary factor is prolonged. In Ants, Bees, and Wasps, for instance, one sees the ethical

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side of life brought into far greater evidence than in many of the vertebrate animals. The lines of conduct of these insects are directed along many and diversified paths, but herein lies such an extensive study that I must only make a passing reference to the subject. Lord Avebury has said :

Habits of Ants “ The Anthropoid apes no doubt approach nearer to man in bodily structure than do any other animals ; but when we consider the habits of Ants, their social organization, their large communities, and elaborate habitations; their roadways, their possession of domestic animals, and even in some cases of slaves, it must be admitted that they have a fair claim to rank next to man in the scale of intelligence.” Ants as a class adopt an extraordinarily active and a varied mode of existence, and while their industry is not surpassed by that of Bees and Wasps, which work all day and in warm weather often at night, trustworthy observers tell us that Ants

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Ants : indulge in amusements or times of "sportive exercises," and relaxation will raise "themselves on from work their hind-legs and caress one another with their antennae, or engage in mock warfare, etc." A striking habit is that of licking one another to assist in cleaning. It has also been stated that if Ants are only slightly hurt or are unwell their companions will tend to their wants ; though, when badly injured or very ill, they are removed from the nest and left to die. Ants then, speaking generally, possess attachment and affection for their fellows, and moreover there are individual differences between them as between men. These insects are in deadly earnest when engaged in warfare ; their military tactics are wonderfully organized, their army possessing soldiers, scouts, drivers, and so on. The natural history of such delightfully interesting creatures deserves special attention, and no doubt there is ample room still for observers to add to our present store of know-

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ledge regarding them. But space does not permit me, moreover I hardly wish, to emphasize the mental powers of these insects, which, though very apparent, may be, for the most part, if not *in toto*, the results of inherited experiences and performed from the beginning of their *imago* existence almost in an automatic manner. However, the few instances regarding their habits which I have set forth

Ants : undoubtedly stamp these creatures as possessed of a remarkable moral sense, but whether self-consciousness, as we know it, of their sense of morality exists is quite another, and I fear an unanswerable, question. Among certain vertebrate animals the moral faculty is well developed in many directions, and the number of instances illustrating mutual aid, succour in distress, and concerted action in battle, that have been given, appear to broad-minded persons as examples of elevated ethical standards of conduct. As in

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the case of the mental powers displayed by lower animals, I shall here confine my remarks regarding the faculty of the moral sense to those examples which have come under my personal notice: such cases are not necessarily confined to animals in a state of captivity.

Moral sense in Gulls and Terns One cannot but admire the marked attention which a flock of Gulls or Terns, exhibits when one of their number has been winged and lies struggling on the water. The gunner, should he remain close by, is ignored, and therefore other members of the flock within gun-shot range run the risk of losing their lives. That the attentiveness of the flock carries with it tenderness of feeling, an anxious curiosity, a wish to do something to get the fallen comrade either on the wing again or out of sight of the danger zone, is shown in the way the members fly gently to and fro, every now and again sweeping to the water as though

Attitude towards the wounded

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encouraging the cripple to try to rise, while others higher up scream loudly for succour as they steady themselves on hovering wings. Those of us whose eyes are trained to the different forms of flight in the same species would unhesitatingly say that here in their movements the birds were fully sympathizing with the unfortunate position of their fallen companion. As we gaze for a little time on the scene of action, we are led to ask the question: What more can these birds do? Unable to convey the wounded to a place of safety, they linger on, and by their presence appear to comfort their companion in distress. Such an ethical aspect is in itself worthy of note, but the case is of more than usual interest because, in their endeavours to bring happiness not only to their flock but

to their wounded individual

An example these sympathetic birds *un-*
of Nature's consciously become the
far-reaching means of establishing a
code of a second and more far-seeing
ethics ethical code. For Nature,

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whose inexorable law of the Struggle for Existence formulates that we live for the general good rather than for the general happiness, here shows the destiny of the wounded bird as it is mercifully hurried to its doom, more quickly than had its comrades abandoned it at once. For the screams of the Terns have attracted a large predatory bird on the scene. Nature has thus conferred a double benefit: she has put out of pain a poor fluttering cripple, which, had it lived, could have been of no use to the community, and in her economical manner has fed at the same time one of her predatory creatures.

The services which birds of a given order render to one another when feeding in company are well-known to all observant ornithologists. Let me here refer to what I have seen in the case of Geese. One, two, or three, or even more act as sentinels, taking up their position at the edge of the flock. The sentinels eat

Birds as sentry-guards

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but little, being constantly on the look-out until relieved of their duties by some other members. Many other cases of out-posted sentinels in flocks of ducks, curlews, and rooks have come under my personal observation.

Often and often have I observed the still more remarkable and praiseworthy methods of mutual aid afforded by *many birds of many diversified species* gathered together in a vicinity (which may cover a very large area) against the common enemy. Let the hawk appear in swooping flight with destructive purport (and very cognisant indeed are the small birds of this movement) ; let the cat prowl and crouch along the hedgerow or dare to come out on the open with the glare of hunger in its flashing orbs, then the air becomes filled with the loud, ringing, defiant battle-cries and alarm-notes of black-birds, thrushes, finches, buntings, warblers, and others, each and all of which will boldly mount on wing to assail the feathered brigand, or will

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fearlessly dash down, mob, and so harass the prowling feline that cover is gladly sought without further delay.

Passing over the well-known moral sense of mutual aid rendered by mammals when danger threatens, such as the stamping of the hind-foot of the rabbit, and of the fore-foot of the sheep, I may conclude this chapter by referring to some points illustrating the ethical sense in fierce predatory animals. The Grey (or Hooded) Crow robs eggs, steals nestlings, and attacks and pulls to pieces disabled creatures often much larger than itself. And yet (as I have seen and elsewhere described) a slender defenceless Redshank may forage amid

the seaweed alongside his *Ethical code* powerful companion without the least fear of being *fierce predatory animals* attacked. It is true that the Crow confines his attacks to nestlings and cripes: albeit, considering the Crow's strength and opportunities of attack, it is remarkable with what amicableness the two species forage together to

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satisfy a common want. No doubt the Crow's power of refraining from attacking unwounded adult birds has become a deeply-rooted instinct, and that the Redshank knows by an equally deeply rooted instinct that it is safe in the company of the former; but this lesson we learn, namely that non-combatant creatures are not living in a constant dread of those which periodically make ferocious and determined attacks. This point I shall now endeavour to bring out much more clearly in dealing with purely flesh-eating animals. Many persons are in the habit of branding predatory animals with such undeserved characters as, '*savage beasts*,' '*treacherous brutes*,' and so on. This might lead one to think that multifarious species of defenceless creatures live in a constant dread of being seized every time a Hawk, a Cat, or some other animal of prey made its appearance. Far from this being the case, there are several hours of the day in which little birds combine into a flock, and enjoy mobbing the Hawk as the

The Falcon's Kiss.

Photograph by C. J. Patten.

PLATE IV.



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latter soars, satiated with food, in graceful circles. From its leisured flight I am satisfied that the Hawk enjoys the sport and audacity of his minor *Fraternity* companions, any one of *between the* which he can so easily pick *Prey-catcher* up after a short pursuit and his when hunger calls his destroying instincts into action.

Falcons nest on the same cliffs with guillemots, razorbills, puffins, kittiwakes, and other birds ; and, while the former kills three of four per day, the colonies of sea-birds appear to enjoy a contented and happy existence, and attend assiduously to their duties of incubation and rearing of the young. And, furthermore, one finds to what an extent the moral sense can be brought out in predatory animals bereft of their natural offspring. Cats are well known to suckle and live in harmony with many species which go to form their natural prey, and I am of the opinion that the case of cats rolling on the ground and purring in the presence of birds is

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an indication of affection and not treachery, as some observers think. Birds are often not the least alarmed and seem to have some intuitive knowledge when a cat is not hungry. I have seen them remain quite close to a cat which was in a caressing mood, though naturally they will, and wisely, refuse to be actually caressed by feline talons, lest mistakes might arise ! My Kestrel Hawk, with screams of anger flew at my pug-dog when the two first met, but after a brief introduction they formed such a bond of friendship that, the hawk demonstrated its affection by jumping on its companion's back, or striking at her in play with its foot, or gently pecking the crown of the head with its beak (*Vide Plate IV "The Falcon's Kiss"*). Moreover, the hawk, when liberated in the garden, always keeps alongside the dog for protection from the black cat.

CHAPTER IV

THE EVOLUTION OF HUMAN MORALITY

In treating of the subject of the moral sense as observed in lower animals, in an outlined manner, I trust that I have made it sufficiently clear that morality is not an exclusively human characteristic, nor is there a breach in continuity in its evolution from lower animals to man. We know that the faculties which are concerned with the evolution of the moral sense are numerous. In the previous chapters I have dealt only with a few of them. One of great importance I must again refer to because of its bearing on the evolution of the conception of the Supernatural. This

faculty is *Imagination*. It *Faculty of Imagination*, the *tap-root* of superstition, and, as we have seen, arises also in the minds of the lower animals. *Superstition* in turn is

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the tap-root of all the various so-called theologies which have evolved without breach of continuity from the time of primeval man down to the present day. Each system has borrowed considerably from its predecessor, so that systems of theologies are for the most part grafts of other systems of theologies. A form of "morality" in its upward growth must needs have accompanied these systems hand in hand, because they contained dictates regarding the meaning of Right and Wrong given forth through human instrumentality by supposed Supernatural Beings, often anthropomorphous, that is possessed of definite human attributes.

The term "theology" may be assigned to these systems because they discourse upon God. But, since they set out to define the undefinable and know the unknowable, in dogmatic accents, and thereby to deal with phenomena which not only transcend but are by their very nature at variance with experience and violate natural

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law, it is to be expected that those of us, who, by a process of unbiassed and rational reasoning founded on historical evidences and scientific facts, have departed from subscribing to the tenets of such systems, must seek after God, that is to say found our theological philosophy along other lines of thought. I mention this here because it is insisted by many that, unless one adopts a systematized creed founded upon dogmas, religion becomes cold and boneless. Far from this being the case, I hold that the religious sense tends to heighten

The religious sense and acquire permanent vigour, as the years of our life roll on, the deeper we *of the Biologist* study the biological sciences, especially Anthropology. And naturally enough. For we are brought into direct communion with God's own works. *God and Nature are to us the one Great Power.* It is the wonderful Force which appeals to our religious sense, and as Naturalists we set to work to analyse

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this and see for ourselves the vast benevolence — despite adversities — which is contained therein. In our country rambles, in the laboratory, anywhere and everywhere when we follow the truths of Nature, the religious sense, if it be in us at all, must grow, ripen, and act as our guide in conduct. Ecclesiasticism—the bulwark of supernatural theology—may dictate her code of morals, but morality can exist apart from Ecclesiasticism. Morality apart from natural theology leaves us nowhere ; indeed, morality joins hands and becomes an integral part of natural theology. By relinquishing dogmatic creeds with their systems of external authority, of rewards, of punishments, etc., which are to many of us an incubus, *we have* (in our endeavours to follow out the best ethical code of life) *the study of God presented to us in a beautiful, pure and simple form*. It may be said that this procedure reduces our creed to mere Agnosticism ; no doubt, though I cannot call this a reduction but

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rather an expansion of religious thought.

The Agnostic attitude For Agnosticism, an attitude rather than a creed, is nevertheless other than a *non est*. We can define the agnostic position in Huxley's words : "that we know nothing that may be beyond phenomena . . . that a man shall not say he knows or believes that which he has no scientific grounds for professing to know or believe"; concerning which Samuel Laing says : "that is not a positive or an aggressive creed, and is reconcilable with any form of moral, intellectual, or religious belief which is not dogmatic—i.e. which does not attempt to impose on us some hard and fast theory of the Universe, based on attempts to define the undefinable and explain the unknowable."

It seems an incalculable gain to have reached this stage of thought, and to have set aside the idea of an anthropomorphic God, in whom some imperfections must be manifest if we, human creatures, fettered by finite

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thought, would fain place attributes upon the Infinite. Is it not the essence of true religion and morality to think and reflect upon God, or the Good in the purely abstract sense, while we endeavour to act as Social and Ethical Beings ; to make the best of adverse circumstances, and to banish from our minds that ingrained superstition—*Fear of the Supernatural ?*

But as many of us have not reached this stage and still adhere to the *Evolution* dictates of anthropomorphic deities, and inasmuch as natural theology has in itself evolved from supernatural theology, there can be no real antithesis between one and the other, no more than there is between the protoplasm and essence of life in the jelly-fish and in that of man. The fact that quarrels arise, and highly-strung religious cults split up into sects, reminds us of the splitting up of many social animals of a given species into tribes, which also wage war. There seems to exist even among the

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most tolerant of sectarianists a sort of struggle for the existence of Immortality, as there is a struggle for earthly existence. Let us, therefore, as *Existence of Naturalists, in other than Immortality* a contentious spirit, take a glance at the upgrowth of superstition, and the morality it has carried with it from the dim past to the present. Let us, indeed, regard the evolution of theology as an inherent instinct or inherited experience in the Natural History of Man, which will likely go on for an immensely long era yet to come. By such a process of study I think we shall be enabled to take the wisest and most dispassionate view regarding the morality associated with present day systems of religions based upon the dictates of external authority.

To return to consider the faculty of Imagination. I have made reference to this in the case of the Dog, and perhaps may be pardoned if I briefly do so again, as at this juncture such a

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reference will help us to lead up to what directly follows regarding the origin of the conception of the Supernatural. In his *Modern Science and Modern Thought* Samuel Laing remarks: "Later in life, and in more serious matters, the dog has certainly the germs of higher intelligence, and does a number of things which require a certain exercise of reasoning power. He has a good memory, and imagination enough to be excited at the prospects of a walk

Dogs and Dreams where there is a chance of finding a rat or a rabbit, and to dream of chasing imaginary rabbits when he is lying curled up upon the hearthrug. . Every good ghost-story begins by describing how the dogs howled and cringed at their master's feet when the first shadow of supernatural presence was cast on the haunted castle." Now, while the imaginative faculty of dogs may not be sufficiently developed to reflect on past dreams, or even to remember them at all (though we have no reason to prove the contrary), still,

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assuming such, it is very unlikely that primeval man, so much higher and removed zoologically speaking by so many gaps from the dog, did not reconsider these visions during the waking state. *Herbert Spencer insists that dreams probably led to the belief in, in fact were, the origin of dualistic ideas.* The

dream is the spirit or *Dreams the* shadowy self which in sleep *fount of* leaves the body, walks, *Dualistic* talks, and appears in many *existence* and varied scenes, and returns to the body as it awakes. In its last sleep of death this spirit becomes a ghost which haunts its former habitations, generally it is supposed with evil purposes, and to prevent it doing mischief it has to be propitiated. Thus became evolved the sacrifices and offerings, and the burial of food and implements with the corpse to induce the ghost to keep quietly in the grave, and so on. It would seem that the dualistic idea appeared at a very remote age in the history of man, and it is wonderful with what tenacity, exten-

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ing as it does over periods of hundreds of thousands of years right down to the present day, the belief in ghosts survives.

Its universality in days *The Fear-
ful in the
Super-
natural* gone by would tend to render this mental state the more transmissible. Here then we see the first indications of the *Fearful*

in the Supernatural. And this would become more intensified as the belief in a future state began to present itself before the mind of the savage. For, as communities became larger and more organized, the strong man of the tribe would continue to force his followers to greater submission, and, when deified at death, this submission, would still be paid him lest he should take vengeance unexpectedly. Next we behold primitive man reflecting on the awe-inspiring destructive forces of Nature. Peals of thunder, flashes of lightning, earthquakes, volcanoes, prairie and forest fires, storms and floods, were evidences of the wrath of the Supernatural. The unseen agencies were God-Devils : good

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when they behaved themselves and brought happiness ; bad when they manifested fury and caused destruction. At this stage man reflected but little on a future state ; during his bodily existence he was in heaven when happy ; in hell when miserable. As the imagination ripened the God-Devil was reflected upon to a greater extent and the evidence of his existence portrayed itself in many tangible objects, animate and inanimate ; at the same time we see a tendency to split off the two deified components, the God usually entering the more attractive and harmless, the Devil the more obnoxious and subtle creatures. But for ages this worship of

Animism remained in a *Evolution* state of chaos ; gods *be-of God and* coming devils and *vice versa*. *Devil from* and from natural creatures *common ancestor* the conception of mythical monsters sprang up, the imaginative faculty becoming so fertile that the manipulative power of modelling these as *idols* in wood and stone developed to an extraordinary

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degree. A step in advance of Animism brings us on to Totemism, in which form of worship animals could think and speak and were, indeed, men in a different form. They were *Totemism and its survivals* looked up to and regarded as heads of tribes and families, and finally as ancestors. Some tribes of Red Indians believe that they have descended from the Elk, others from the Bear, others from the Fox, others from the Beaver, and so on from other animals. In his *Human Origins* Samuel Laing points out that the "animal worship of Egypt has been probably a survival of the old faiths in totems, differing among different clans, which were so firmly rooted in the popular traditions, that the priests had to accommodate their religious conceptions to it, as the Christian Fathers did with so many pagan superstitions. The division of the twelve tribes of Israel seems also to have been originally totemic, judging from the old saga in

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which Jacob gives them his blessing, identifying Judah with a lion, Dan with an adder, and so on. And, even at the present day, the crest of the Duke of Sutherland carries us back to the time when the wild-cat was the badge, and very probably some great and fierce wild cat the ancestor, in popular belief, of the fighting clan Chattan."

And now we see Man—his mind still in the cradle of his infancy—gazing upward and beholding in the starry heavens many strange and weird forms in constellations and other stellar groups: out of these sprang the conception of personified astronomical myths. This

is an important era in the *Astronomical myths* imaginative faculty of Man, seeing that so many of the legends, which form the basis of dogmatic creeds of civilized nations within historic times (but dating as far back as the time of the ancient Egyptians, and as recently as current Christianity) are accepted with pur-

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blind faith and regarded as literally and absolutely true facts. However, before arriving at the period of written history, let us ask ourselves what was the code of human morals in the crudely savage and superstitious ages. Was

Moral Sense in Pre-historic man Man then possessed of moral sense ? Assuredly so. For as we have seen in the lower *Pre-historic* animals that many moral faculties were manifest, so also have these been transmitted by evolution to Man in whom they have become more elaborated. And before we ask how the moral sense arose, we wish to know if Man, at the dawn of existence, differed much in moral character from his more humble compatriots. The answer seems plain enough. For, seeing that his imaginative faculty was more fertile and that he had the power of reflecting on the visions of night and upon effects produced by unseen agencies, and that these haunted him, he became the victim of *fear* and *timidity*. Handicapped by such a mental state, he directed his conduct

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to concerted action, and the gathering of his clans gave strength and support in the struggle for life. Possessed already then of a fundamental or instinctive moral sense comparable to that possessed of by a dog, only accentuated by a greater development of his imaginative faculty, we, at this juncture naturally ask: What is then the derivative of that moral sense common to all Nature's creatures ?

I have shewn in previous pages that a fundamental moral sense is not wanting even in solitary predatory animals, the outcome of which is that *a happy existence can for the most part be permitted to living creatures in general.* And when we consider that the non-predatory animals are usually taken by surprise by those, who in the struggle of

existence must needs make use of them for food, *a pessimistic or cruel view of Nature's ways appears not to Cruelty illogical.*

Sympathy is the foundation stone on which the moral sense has

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been erected, and the fount of sympathy would seem to have arisen with the commencement of conjugal ties and filial affections. The young, on being tended to by their parents, would naturally, i.e. by a process of natural selection, derive pleasure from the benefits thus conferred on them in the society of their parents, as would one

Dawn of the Social Instinct parent in the society of its mate. Thus the social instinct would spring into existence, and in cases of several families benefited by close association, not only one but many generations might become sociable and keep together. Tribal communities would thus be formed, in which the social instinct would become strongly rooted. And here I believe I am right in saying that, if it were possible to make a statistical survey of the whole animal kingdom, the majority of creatures would be found living in societies, though these varied from small groups to immense colonies. And, without elaborating further on the

subject of sociability which would take us too far afield in the present treatise, we can readily see that sympathy among the members of the flock would of necessity follow. If sympathy even in its most restricted and elemental form, did not arise, then in the struggle for existence the factors which conserve or make for the general good of the community would cease to act and finally disappear *in toto*. And sympathy when evolved would manifest its moral code in many actions. And now, before

considering the moral sense of *Filial affection* Man as he appears at this stage, i.e. a tribal sociable *the tap-root* animal, I may point out *of the social instinct* that while I hold to the idea that filial affection appears to be the tap-root of the social instinct, it may happen that natural selection has ordained in a few cases for the good of their special community that this filial affection should be of short duration, and indeed in still more special cases be replaced by animosity. As illustrating these points

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I may mention birds of prey which in the wild state drive away their offspring from their hunting-grounds at a tender age, while working-bees kill their brother-drones, and queen-bees their daughter-queens. Even here in the

The ethics of the energetic members in Insect communities and fate of the Indolent

case of the bees it is quite obvious that the destruction of the drones by the workers is far from being an act devoid of moral sense. For, if the experiment of putting a drone and a working-bee in a roomy glass box (or under a tumbler as I have often done),

be tried, it will be seen that the working-bee (provided with her fatal weapon of offence, the sting) does not at once set herself out to sting the drone to death. On the contrary, both bees become occupied in trying to escape, and, unless numbers are imprisoned together, the stinging-bees will not hurt the drones ; but, when the room becomes suffocatingly small, then not only are the drones attacked but

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the workers attack each other. But at the hive things are different. The sole office of the drone is that of fertilizing the queen; before and after this is accomplished he leads an indolent life, being pushed out of the way by active energetic creatures and devoured in great numbers by spiders and other predatory arthropods. Thus, when not engaged in fertilizing the queen, should he remain close by the hive and thereby interrupt the working community he, regarded as a useless 'loafer,' is naturally disposed of in the best way possible, viz. by extinction. Indeed, from the excellence of the results obtained by the government here adopted, in which only those who work are permitted to survive, it is suggestive that we might adopt less lenient measures than we are wont to do when human 'loafers' come about, and, determined not to work, persist in acting as obstructionists to the energetic community.

But now let us inquire into the moral character of man assuming him to have become a sociable animal. Sympathy

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in its various aspects should guide him in his line of conduct, yet how can we recognize this important

Analysis of moral sense with the *re-atrocious* volting cruelties which the *deeds of savages* records of his rude and barbarous age darken ? Nevertheless,

we are often too hasty in condemning the cannibals, the scalp-hunters, or the Dyak head-hunters the last-mentioned being not satisfied unless they preserve and dry their gruesome trophies. Many other revolting savage customs might be cited, enough to make us wonder if the moral sense of the social savage is even on a level with that of the dog. However, we must not lose sight of the fact that the moral code is instinctive only to the members of a given tribe, so that such sociable actions as concerted movement in attack, mutual aid in defence, and so on, do not extend to all the individuals even of a small insular nation. Consequently, while there is a hopeless clash of morality when two or more tribes collide, still it is manifest that

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human savagery must be intermittent, very irregular, and—most important of all—quite unexpected, so that here also, except when actually engaged in the affray, Man in his most abject state did not constantly contemplate on and live in dread of hostile conditions. Even among the best organized communities of the lower animals tribal wars break out, as inevitably as thunder-storms and hurricanes burst upon our planet. In such feuds the weaker members perish, and the wounded are often set upon, torn to pieces, and devoured by their adversaries. Similarly in the case of Man ; nor can we do justice to his gradual evolution, by natural means, and at the same time look upon cannibalism, scalping, or head-hunting as indiscriminate butcheries, but rather as occasional disasters which necessarily follow tribal feuds.

Cannibalism and religious rites Indeed, cannibalism has to a large extent been associated with religious rites, the victim often laying down his life voluntarily for motives

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conceived as highly advantageous to the tribe ; sometimes he was deified after death, and the eating of the slain god finds its parallel, as a rite in several religious systems. These acts of atonement by the shedding of human blood, which have chronicled the past ages of Man's history, were, with the active growth of his Imagination in which Fear became the ever dominant factor, a necessary phase in his evolution toward that higher state known as civilization, in which we behold an expansion and elevation of his moral code.

I need only make a passing reference to Man as he appears in historic times.

The ancient civilizations *Man in historic times* point to great antiquity, and, judging from their elaborated systems of religions and morals, they must have taken an immensity of time to reach the era of civilization. These great Empires, Egypt, Babylon, Rome, Greece, and others, have grown up, flourished, sunk, and died, leaving as a

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legacy to us permanent written records of their peoples and their moral code. The cults of the Orientals, speaking in a very general way, were evolved to a large extent out of solar myths, based on the daily rising and setting of the sun, its yearly course through the seasons, and the signs of the zodiac.

*Solar
mythology
and its
present-day
survivals*

It is not possible here to enter into a study of comparative religions of civilised peoples, but it may be remarked that many legends and dogmas of such vital importance in the eyes of sectarian religionists, such as *the Creation and Fall of Man, Universal Deluge, the Resurrection of the Body, the Virgin Birth of an Incarnate Deity in human form*, and several others, appear to have had their conception of origin in Astronomical and mainly in Solar Mythology. And now, passing through the Dark Ages which succeeded the fall of the latest great Empire, namely Rome, and bearing in mind that the pendulum had to swing back as an era of savage

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bigotry was entered upon, we at length arrive at the present age. Here, then, let us conclude by taking a glance at the moral codes which are associated with Man in that stage of evolution in which he now presents himself to us.

We must bear in mind that throughout I have insisted on the moral sense

and the various beliefs *Man of* which have sprung out of *present-day* its imaginative faculty as *civilizations* being *forces of evolution*,

and that all these various beliefs, when formulated into dogmas, can be linked together and traced back to their common ancestor — *Crude Superstition*. Hence it seems obvious that the Naturalist, from his point of view, would conveniently classify all

civilized communities, according to the evolution of *stentious and* their moral sense, into two *the Non-* great Orders, namely : the *superstitious* Superstitious, and the Non-*Man* superstitious. There may be some weak connecting links between the two, but these cannot

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break down our classification. Furthermore, it matters not whether we are considering Western or Eastern civilizations, or even if we were to include the Ancient civilizations. What we are considering is the morality of that class of Man which has evolved into the highest degree of intellectuality, and into the civilized sphere into which we think he has arrived, though at the same time it remains hard to comprehend what civilization really is and how it can be defined.

To return to our classification : and firstly with regard to the Superstitious Order. By far the greater number of persons in the world are here included. The existence of Supernature inhabited by Supernatural Beings, which Beings can act at variance with or even rupture the fixed Laws of Nature is the first principle or essence of their Imaginative Faculty. These Beings

First principles of the Superstitious Man

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may exist plurally, pseudo-plurally (e.g. the Deities of the Christian Trinity), or more rarely only in the singular number (Unitarianism). The intensity of the Imaginative Faculty allows of a conception of Anthropomorphism, that is to say, of Beings possessed of humanly-conceived form and attributes. Fear-

ful in their superstitious *Anthropomorphism and the standardization of an ethical code* conceptions the people of the superstitious order seek to standardize, the conception of Right and Wrong action, and this conception, of purely human origin, is attributed by the leaders of the particular superstition to come from the Super-Natural Being, *whom they mould in their own image*. But it is the leaders or expounders of the cult who dictate authority, and, acting as deputies to the Super-natural, try to over-stimulate the Faculty of Imagination, until the mind becomes warped, and *the power of faith, rather than the power of*

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reasoning, takes the position of paramount importance in morals. But faith, unless strongly backed and controlled by reason, is a shifting sand on which to erect a code of morals. For, as the community of the cult enlarges, the struggle to live by the standard of morality set up becomes increasingly difficult, and what inevitably follows is that the faithful become imposed upon by being asked to believe in further elaborations of the Supernatural's ordinances. This, which corresponds to the systematizing of creeds and the expounding of certain mystical philosophies, can have only a tenure of existence. For, even assuming the Superstition to be an increasingly attractive and fashionable one, it will, as its community increases, soon elaborate to such an extent that, at last unable to maintain its standard of morality, it becomes split up into sections, which tend to subdivide at a subsequent period. The conception of the Imagery and its elaborations lose unity, and the feelings of the

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members of the divided cults, now at variance, become heated, and later on

Evolution of Sectarianism in civilized superstitious cults sufficiently frenzied to induce sectarian bitterness. These manifestos of superstition go by the name of "religion," but, when sectarianism becomes rife and modern tribal wars, so to speak, are waged, it is clear that true religious thought becomes dwarfed,

and may disappear: fortunately, however, only for a time, for evolution ever tends to carry the moral sense upward. Thus, by a swing of the pendulum, a new and simpler superstition, founded on less extravagant imagination than its predecessor, springs out of the tail of one of the sectarian offshoots, and may supplant it. The cycle is repeated and so the drama of

Endurance of the Superstitious order the Superstitious Order of Man endures. His morals more or less coincide with his beliefs. The simpler his faith, the simpler his code, but at its best

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the moral sense, based upon superstition, is, from the essence of its foundation, bound to be permeated with falsities and absurdities. Fortunately, however, there is a moral sense implanted in all of us, which has gradually evolved and has by a process of Natural Selection made us heirs of those virtues which we display instinctively for the good of the community. These we all possess, though in varying degrees, but in the Superstitious man many of them become hampered from developing to their full extent. For, if certain faculties of the moral sense run riot and largely monopolize action of thought—and this is what happens in the case of highly imaginative people—the moral sense becomes lop-sided, and morality is viewed as through smoked glasses.

We may now ask Who is the Non-superstitious Man, and of what moral code is he possessed? At present he is doubtless greatly in the minority, but with the advance of scientific thought he appears to be increasing in numbers

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daily. He hails from two sources. In either case he is fortified by the possession of a wholesome degree of scepticism and of critical faculty, which enable him to inquire unbiassedly into the origin of phenomena, and to accept or reject statements according as his own reasoning faculty alone guides him. He fails to see '*Super-Nature*' outside *Nature* as known to him, and he stands aloof from the dictates of external authority when it asserts without evidence. It is obvious that one of the sources from whence he springs is from a Superstitious Cult, out of which he emerges as a dissenter, and to which it is exceedingly rare to find him returning. The other source finds its example in the man whose parents already have belonged to the Non-superstitious Order and who adopts the same. The position of the Non-superstitious man is simple to follow. He neither asserts nor denies questions concerning phenomena which lie outside the range of ex-

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perience ; but, taking his moral stand altogether on the firm platform of evolutionary evidence, he recognizes that *apart from conceptions of the Super-natural* there are fundamental rules of Morality apart from any Imaginative conceptions of the Super-natural. He knows such fundamental rules are the outcome of heredity and environment, and that with each successive generation they become more and more so instinctively. Unfettered mentally by an artificial code of morals of the sectarian religionist, his moral sense naturally comes to the front, and he knows his motto to be :

“ And because right is right, to follow right
Were wisdom in the scorn of consequence.

FINIS